

SEQUENCE LISTING

<110> Statens Serum Institut, Copenhagen Denmark

<120> Nucleic Acid Fragments and Polypeptide
Fragments Derived from M. Tuberculosis

<130> 20486US5

<150> US09/615,947

<151> 2000-07-13

<150> US09/246,191

<151> 1998-12-30

<160> 68

<170> FastSEQ for Windows Version 3.0

<210> 1

<211> 324

<212> DNA

<213> Mycobacterium tuberculosis

<220>

<221> CDS

<222> (1) ... (321)

<400> 1

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Leu Thr His Lys Arg Thr Lys Arg Gln Pro Ala Ile Ala Ala Gly Leu
1 5 10 15

48

aac gcc ccg cgt cgg aat cgc gtt ggg cgg caa cat ggt tgg ccg gcc
Asn Ala Pro Arg Arg Asn Arg Val Gly Arg Gln His Gly Trp Pro Ala
20 25 30

96

gac gtt ccg tcc gcc gag cag cgc cgc gcc caa cgg cag cgc gac ctc
Asp Val Pro Ser Ala Glu Gln Arg Arg Ala Gln Arg Gln Arg Asp Leu
35 40 45

144

gag gct atc cgc cga gcg tac gcc gag atg gtg gcg aca tca cac gaa
Glu Ala Ile Arg Arg Ala Tyr Ala Glu Met Val Ala Thr Ser His Glu
50 55 60

192

atc gac gac aca gcc gaa ctg gcg ctg ttg tcg atg cat ctc gac
Ile Asp Asp Asp Thr Ala Glu Leu Ala Leu Ser Met His Leu Asp
65 70 75 80

240

gat gag cag cgc cgg ctt gag gcg ggg atg aag ctc ggc tgg cat ccg
Asp Glu Gln Arg Arg Leu Glu Ala Gly Met Lys Leu Gly Trp His Pro
85 90 95

288

tat cac ttc ccc gac gaa ccc gac agc aaa cag tga
Tyr His Phe Pro Asp Glu Pro Asp Ser Lys Gln

324

PCT/US2009/036650

100

105

<210> 2
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 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 2
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 20 25 30
 Asp Val Pro Ser Ala Glu Gln Arg Arg Ala Gln Arg Gln Arg Asp Leu
 35 40 45
 Glu Ala Ile Arg Arg Ala Tyr Ala Glu Met Val Ala Thr Ser His Glu
 50 55 60
 Ile Asp Asp Asp Thr Ala Glu Leu Ala Leu Leu Ser Met His Leu Asp
 65 70 75 80
 Asp Glu Gln Arg Arg Leu Glu Ala Gly Met Lys Leu Gly Trp His Pro
 85 90 95
 Tyr His Phe Pro Asp Glu Pro Asp Ser Lys Gln
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<210> 3
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 <213> Mycobacterium tuberculosis

<220>
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 <222> (1)...(243)

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 gag ctt gtc ggc ggc ccg cca gtc gag gct tcg gcc gcc gcg ctg gcc 96
 Glu Leu Val Gly Gly Pro Pro Val Glu Ala Ser Ala Ala Leu Ala
 20 25 30
 ggc gac gcc gcg ggc gca tgg cgg acc gcg gcc gtc gag ctt gcg cga 144
 Gly Asp Ala Ala Gly Ala Trp Arg Thr Ala Ala Val Glu Leu Ala Arg
 35 40 45
 gcg ttg gtc cgc gct gtg gcg gag tcg cac ggc gtc gcg gcc gtt ttg 192
 Ala Leu Val Arg Ala Val Ala Glu Ser His Gly Val Ala Ala Val Leu
 50 55 60
 ttc gcc gcg acg gcc gcc gcg gcg gcc gtc gac cgg ggt gat ccg 240
 Phe Ala Ala Thr Ala Ala Ala Ala Val Asp Arg Gly Asp Pro
 65 70 75 80
 ccg tga 246
 Pro

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<210> 4
<211> 81
<212> PRT
<213> *Mycobacterium tuberculosis*

<400> 4

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Met Ser Gly His Ala Leu Ala Ala Arg Thr Leu Leu Ala Ala Ala Asp
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Glu Leu Val Gly Gly Pro Pro Val Glu Ala Ser Ala Ala Ala Leu Ala
      20         25         30
Gly Asp Ala Ala Gly Ala Trp Arg Thr Ala Ala Val Glu Leu Ala Arg
      35         40         45
Ala Leu Val Arg Ala Val Ala Glu Ser His Gly Val Ala Ala Val Leu
      50         55         60
Phe Ala Ala Thr Ala Ala Ala Ala Ala Val Asp Arg Gly Asp Pro
65          70          75          80
Pro

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<211> 1200

<212> DNA

<212> DNN

52203

<220>

$\langle z_{21} \rangle$ CBS

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Met Ile Thr Met Leu Trp His Ala Met
1 5

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Pro Pro Glu Leu Asn Thr Ala Arg Leu Met Ala Gly Ala Gly Pro Ala
   10           15           20           25

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cca atg ctt gct gcg gca gca gga tgg cag acg ctt tcg gct ctg      150
Pro Met Leu Ala Ala Ala Gly Trp Gln Thr Leu Ser Ala Ala Leu
          30          35          40

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gac gct cag gcc gtc gag ttg acc gcg cgc ctg aac tct ctg gga gaa 198
 Asp Ala Gln Ala Val Glu Leu Thr Ala Arg Leu Asn Ser Leu Gly Glu
 45 50 55

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gcc tgg act gga ggt ggc agc gac aag gcg ctt gcg gct gca acg ccg 246
Ala Trp Thr Gly Gly Ser Asp Lys Ala Leu Ala Ala Ala Thr Pro
          60          65          70

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atg gtg gtc tgg cta caa acc gcg tca aca cag gcc aag acc cgt gcg 294
 Met Val Val Trp Leu Gln Thr Ala Ser Thr Gln Ala Lys Thr Arg Ala
 75 80 85

atg cag gcg acg gcg caa gcc gcg gca tac acc acc cag gcc atg gcc acg 342
 Met Gln Ala Thr Ala Gln Ala Ala Ala Tyr Thr Gln Ala Met Ala Thr
 90 95 100 105

acg ccg tcg ctg ccg gag atc gcc gcc aac cac atc acc acc cag gcc gtc 390
 Thr Pro Ser Leu Pro Glu Ile Ala Ala Asn His Ile Thr Gln Ala Val

110	115	120	
ctt acg gcc acc aac ttc ttc ggt atc aac acg atc ccg atc gcg ttg Leu Thr Ala Thr Asn Phe Phe Gly Ile Asn Thr Ile Pro Ile Ala Leu 125	130	135	438
acc gag atg gat tat ttc atc cgt atg tgg aac cag gca gcc ctg gca Thr Glu Met Asp Tyr Phe Ile Arg Met Trp Asn Gln Ala Ala Leu Ala 140	145	150	486
atg gag gtc tac cag gcc gag acc gcg gtt aac acg ctt ttc gag aag Met Glu Val Tyr Gln Ala Glu Thr Ala Val Asn Thr Leu Phe Glu Lys 155	160	165	534
ctc gag ccg atg gcg tcg atc ctt gat ccc ggc gcg agc cag agc acg Leu Glu Pro Met Ala Ser Ile Leu Asp Pro Gly Ala Ser Gln Ser Thr 170	175	180	582
acg aac ccg atc ttc gga atg ccc tcc cct ggc agc tca aca ccg gtt Thr Asn Pro Ile Phe Gly Met Pro Ser Pro Gly Ser Ser Thr Pro Val 190	195	200	630
ggc cag ttg ccg ccg gcg gct acc cag acc ctc ggc caa ctg ggt gag Gly Gln Leu Pro Pro Ala Ala Thr Gln Thr Leu Gly Gln Leu Gly Glu 205	210	215	678
atg agc ggc ccg atg cag cag ctg acc cag ccg ctg cag cag gtg acg Met Ser Gly Pro Met Gln Gln Leu Thr Gln Pro Leu Gln Gln Val Thr 220	225	230	726
tcg ttg ttc agc cag gtg ggc ggc acc ggc ggc aac cca gcc gac Ser Leu Phe Ser Gln Val Gly Gly Thr Gly Gly Asn Pro Ala Asp 235	240	245	774
gag gaa gcc gcg cag atg ggc ctg ctc ggc acc agt ccg ctg tcg aac Glu Glu Ala Ala Gln Met Gly Leu Leu Gly Thr Ser Pro Leu Ser Asn 250	255	260	822
cat ccg ctg gct ggt gga tca ggc ccc agc gcg ggc ggc ctg ctg His Pro Leu Ala Gly Gly Ser Gly Pro Ser Ala Gly Ala Gly Leu Leu 270	275	280	870
cgc gcg gag tcg cta cct ggc gca ggt ggg tcg ttg acc ccg acg ccg Arg Ala Glu Ser Leu Pro Gly Ala Gly Gly Ser Leu Thr Arg Thr Pro 285	290	295	918
ctg atg tct cag ctg atc gaa aag ccg gtt gcc ccc tcg gtg atg ccg Leu Met Ser Gln Leu Ile Glu Lys Pro Val Ala Pro Ser Val Met Pro 300	305	310	966
gcg gct gct gcc gga tcg tcg gcg acg ggt ggc gcc gct ccg gtg ggt Ala Ala Ala Ala Gly Ser Ser Ala Thr Gly Gly Ala Ala Pro Val Gly 315	320	325	1014
gcg gga gcg atg ggc cag ggt gcg caa tcc ggc ggc tcc acc agg ccg Ala Gly Ala Met Gly Gln Gly Ala Gln Ser Gly Gly Ser Thr Arg Pro 330	335	340	1062
ggt ctg gtc gcg cca ccg ctc gcg cag gag cgt gaa gaa gac gac			1110

DRAFT 1996-08-20

Gly Leu Val Ala Pro Ala Pro Leu Ala Gln Glu Arg Glu Glu Asp Asp
 350 355 360
 gag gac gac tgg gac gaa gag gac gac tgg tgagctcccg taatgacaac 1160
 Glu Asp Asp Trp Asp Glu Glu Asp Asp Trp
 365 370
 agacttcccg gccacccggg ccggaagact tgccaacatt 1200
 <210> 6
 <211> 371
 <212> PRT
 <213> *Mycobacterium tuberculosis*
 <400> 6
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 1 5 10 15
 Arg Leu Met Ala Gly Ala Gly Pro Ala Pro Met Leu Ala Ala Ala Ala
 20 25 30
 Gly Trp Gln Thr Leu Ser Ala Ala Leu Asp Ala Gln Ala Val Glu Leu
 35 40 45
 Thr Ala Arg Leu Asn Ser Leu Gly Glu Ala Trp Thr Gly Gly Ser
 50 55 60
 Asp Lys Ala Leu Ala Ala Ala Thr Pro Met Val Val Trp Leu Gln Thr
 65 70 75 80
 Ala Ser Thr Gln Ala Lys Thr Arg Ala Met Gln Ala Thr Ala Gln Ala
 85 90 95
 Ala Ala Tyr Thr Gln Ala Met Ala Thr Thr Pro Ser Leu Pro Glu Ile
 100 105 110
 Ala Ala Asn His Ile Thr Gln Ala Val Leu Thr Ala Thr Asn Phe Phe
 115 120 125
 Gly Ile Asn Thr Ile Pro Ile Ala Leu Thr Glu Met Asp Tyr Phe Ile
 130 135 140
 Arg Met Trp Asn Gln Ala Ala Leu Ala Met Glu Val Tyr Gln Ala Glu
 145 150 155 160
 Thr Ala Val Asn Thr Leu Phe Glu Lys Leu Glu Pro Met Ala Ser Ile
 165 170 175
 Leu Asp Pro Gly Ala Ser Gln Ser Thr Thr Asn Pro Ile Phe Gly Met
 180 185 190
 Pro Ser Pro Gly Ser Ser Thr Pro Val Gly Gln Leu Pro Pro Ala Ala
 195 200 205
 Thr Gln Thr Leu Gly Gln Leu Gly Glu Met Ser Gly Pro Met Gln Gln
 210 215 220
 Leu Thr Gln Pro Leu Gln Gln Val Thr Ser Leu Phe Ser Gln Val Gly
 225 230 235 240
 Gly Thr Gly Gly Asn Pro Ala Asp Glu Glu Ala Ala Gln Met Gly
 245 250 255
 Leu Leu Gly Thr Ser Pro Leu Ser Asn His Pro Leu Ala Gly Gly Ser
 260 265 270
 Gly Pro Ser Ala Gly Ala Gly Leu Leu Arg Ala Glu Ser Leu Pro Gly
 275 280 285
 Ala Gly Gly Ser Leu Thr Arg Thr Pro Leu Met Ser Gln Leu Ile Glu
 290 295 300
 Lys Pro Val Ala Pro Ser Val Met Pro Ala Ala Ala Gly Ser Ser
 305 310 315 320
 Ala Thr Gly Gly Ala Ala Pro Val Gly Ala Gly Ala Met Gly Gln Gly
 325 330 335
 Ala Gln Ser Gly Gly Ser Thr Arg Pro Gly Leu Val Ala Pro Ala Pro
 340 345 350

Leu Ala Gln Glu Arg Glu Glu Asp Asp Glu Asp Asp Trp Asp Glu Glu
 355 360 365

Asp Asp Trp
 370

<210> 7
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 7
 Met Thr His Lys Arg Thr Lys Arg Gln Pro Ala Ile Ala Ala Gly Leu
 1 5 10 15
 Asn Ala

<210> 8
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 8
 Ala Ile Ala Ala Gly Leu Asn Ala Pro Arg Arg Asn Arg Val Gly Arg
 1 5 10 15
 Gln His

<210> 9
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 9
 Arg Asn Arg Val Gly Arg Gln His Gly Trp Pro Ala Asp Val Pro Ser
 1 5 10 15
 Ala Glu

<210> 10
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 10
 Pro Ala Asp Val Pro Ser Ala Glu Gln Arg Arg Ala Gln Arg Gln Arg
 1 5 10 15
 Asp Leu

<210> 11
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 11
 Arg Ala Gln Arg Gln Arg Asp Leu Glu Ala Ile Arg Arg Ala Tyr Ala
 1 5 10 15
 Glu Met

<210> 12
<211> 18
<212> PRT
<213> *Mycobacterium tuberculosis*

<400> 12
Ile Arg Arg Ala Tyr Ala Glu Met Val Ala Thr Ser His Glu Ile Asp
1 5 10 15
Asp Asp

<210> 13
<211> 18
<212> PRT
<213> *Mycobacterium tuberculosis*

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<400> 13
Thr Ser His Glu Ile Asp Asp Asp Thr Ala Glu Leu Ala Leu Leu Ser
      1           5           10          15
Met His

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<210> 14
<211> 18
<212> PRT
<213> *Mycobacterium tuberculosis*

<400> 14
Glu Leu Ala Leu Leu Ser Met His Leu Asp Asp Glu Gln Arg Arg Leu
1 5 10 15
Glu Ala

<210> 15
<211> 18
<212> PRT
<213> *Mycobacterium tuberculosis*

<400> 15
Asp Glu Gln Arg Arg Leu Glu Ala Gly Met Lys Leu Gly Trp His Pro
1 5 10 15
Tyr His

<210> 16
<211> 18
<212> PRT
<213> *Mycobacterium tuberculosis*

<400> 16
Met Lys Leu Gly Trp His Pro Tyr His Phe Pro Asp Glu Pro Asp Ser
1 5 10 15
Lys Gln

<210> 17
<211> 18
<212> PRT

<213> *Mycobacterium tuberculosis*

<400> 17

Met Ser Gly His Ala Leu Ala Ala Arg Thr Leu Leu Ala Ala Ala Asp
 1 5 10 15
 Glu Leu

<210> 18

<211> 18

<212> PRT

<213> *Mycobacterium tuberculosis*

<400> 18

Ala Ala Asp Glu Leu Val Gly Gly Pro Pro Val Glu Ala Ser Ala Ala
 1 5 10 15
 Ala Leu

<210> 19

<211> 18

<212> PRT

<213> *Mycobacterium tuberculosis*

<400> 19

Ala Ser Ala Ala Ala Leu Ala Gly Asp Ala Ala Gly Ala Trp Arg Thr
 1 5 10 15
 Ala Ala

<210> 20

<211> 18

<212> PRT

<213> *Mycobacterium tuberculosis*

<400> 20

Ala Trp Arg Thr Ala Ala Val Glu Leu Ala Arg Ala Leu Val Arg Ala
 1 5 10 15
 Val Ala

<210> 21

<211> 18

<212> PRT

<213> *Mycobacterium tuberculosis*

<400> 21

Leu Val Arg Ala Val Ala Glu Ser His Gly Val Ala Ala Val Leu Phe
 1 5 10 15
 Ala Ala

<210> 22

<211> 18

<212> PRT

<213> *Mycobacterium tuberculosis*

<400> 22

Val Leu Phe Ala Ala Thr Ala Ala Ala Val Asp Arg Gly Asp

1	5	10	15
Pro	Pro		

<210> 23
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 23
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 1 5 10 15
 Val Tyr

<210> 24
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 24
 Ala Ala Leu Ala Met Glu Val Tyr Gln Ala Glu Thr Ala Val Asn Thr
 1 5 10 15
 Leu Phe

<210> 25
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 25
 Glu Thr Ala Val Asn Thr Leu Phe Glu Lys Leu Glu Pro Met Ala Ser
 1 5 10 15
 Ile Leu

<210> 26
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 26
 Leu Glu Pro Met Ala Ser Ile Leu Asp Pro Gly Ala Ser Gln Ser Thr
 1 5 10 15
 Thr Asn

<210> 27
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 27
 Gly Ala Ser Gln Ser Thr Thr Asn Pro Ile Phe Gly Met Pro Ser Pro
 1 5 10 15
 Gly Ser

<210> 28
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 28
 Phe Gly Met Pro Ser Pro Gly Ser Ser Thr Pro Val Gly Gln Leu Pro
 1 5 10 15
 Pro Ala

<210> 29
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 29
 Pro Val Gly Gln Leu Pro Pro Ala Ala Thr Gln Thr Leu Gly Gln Leu
 1 5 10 15
 Gly Glu

<210> 30
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 30
 Gln Thr Leu Gly Gln Leu Gly Glu Met Ser Gly Pro Met Gln Gln Leu
 1 5 10 15
 Thr Gln

<210> 31
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 31
 Gly Pro Met Gln Gln Leu Thr Gln Pro Leu Gln Gln Val Thr Ser Leu
 1 5 10 15
 Phe Ser

<210> 32
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 32
 Gln Gln Val Thr Ser Leu Phe Ser Gln Val Gly Gly Thr Gly Gly
 1 5 10 15
 Asn Pro

<210> 33
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

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<400> 33
 Gly Gly Thr Gly Gly Gly Asn Pro Ala Asp Glu Glu Ala Ala Gln Met
 1 5 10 15
 Gly Leu

<210> 34
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 34
 Glu Glu Ala Ala Gln Met Gly Leu Leu Gly Thr Ser Pro Leu Ser Asn
 1 5 10 15
 His Pro

<210> 35
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 35
 Thr Ser Pro Leu Ser Asn His Pro Leu Ala Gly Gly Ser Gly Pro Ser
 1 5 10 15
 Ala Gly

<210> 36
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 36
 Gly Gly Ser Gly Pro Ser Ala Gly Ala Gly Leu Leu Arg Ala Glu Ser
 1 5 10 15
 Leu Pro

<210> 37
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 37
 Leu Leu Arg Ala Glu Ser Leu Pro Gly Ala Gly Gly Ser Leu Thr Arg
 1 5 10 15
 Thr Pro

<210> 38
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 38
 Gly Gly Ser Leu Thr Arg Thr Pro Leu Met Ser Gln Leu Ile Glu Lys
 1 5 10 15

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Pro Val

<210> 39
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 39
 Ser Gln Leu Ile Glu Lys Pro Val Ala Pro Ser Val Met Pro Ala Ala
 1 5 10 15
 Ala Ala

<210> 40
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 40
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 1 5 10 15
 Ala Pro

<210> 41
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 41
 Ala Thr Gly Gly Ala Ala Pro Val Gly Ala Gly Ala Met Gly Gln Gly
 1 5 10 15
 Ala Gln

<210> 42
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 42
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 1 5 10 15
 Val Ala

<210> 43
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 43
 Thr Arg Pro Gly Leu Val Ala Pro Ala Pro Leu Ala Gln Glu Arg Glu
 1 5 10 15
 Glu Asp

<210> 44

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<211> 18
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 44
 Ala Gln Glu Arg Glu Glu Asp Asp Glu Asp Asp Trp Asp Glu Glu Asp
 1 5 10 15
 Asp Trp

<210> 45
 <211> 18
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 45
 Met Leu Trp His Ala Met Pro Pro Glu Leu Asn Thr Ala Arg Leu Met
 1 5 10 15
 Ala Gly

<210> 46
 <211> 18
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 46
 Ala Arg Leu Met Ala Gly Ala Gly Pro Ala Pro Met Leu Ala Ala Ala
 1 5 10 15
 Ala Gly

<210> 47
 <211> 18
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 47
 Pro Met Leu Ala Ala Ala Gly Trp Gln Thr Leu Ser Ala Ala Leu
 1 5 10 15
 Asp Ala

<210> 48
 <211> 18
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 48
 Thr Leu Ser Ala Ala Leu Asp Ala Gln Ala Val Glu Leu Thr Ala Arg
 1 5 10 15
 Leu Asn

<210> 49
 <211> 18
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 49
 Val Glu Leu Thr Ala Arg Leu Asn Ser Leu Gly Glu Ala Trp Thr Gly
 1 5 10 15
 Gly Gly

<210> 50
 <211> 18
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 50
 Gly Glu Ala Trp Thr Gly Gly Ser Asp Lys Ala Leu Ala Ala Ala
 1 5 10 15
 Thr Pro

<210> 51
 <211> 18
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 51
 Lys Ala Leu Ala Ala Ala Thr Pro Met Val Val Trp Leu Gln Thr Ala
 1 5 10 15
 Ser Thr

<210> 52
 <211> 18
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 52
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 1 5 10 15
 Ala Thr

<210> 53
 <211> 18
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 53
 Lys Thr Arg Ala Met Gln Ala Thr Ala Gln Ala Ala Ala Tyr Thr Gln
 1 5 10 15
 Ala Met

<210> 54
 <211> 18
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 54
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 1 5 10 15
 Ala Ala

<210> 55
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 55
 Thr Pro Ser Leu Pro Glu Ile Ala Ala Asn His Ile Thr Gln Ala Val
 1 5 10 15
 Leu Thr

<210> 56
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 56
 Leu Pro Glu Ile Ala Ala Asn His Ile Thr Gln Ala Val Leu Thr Ala
 1 5 10 15
 Thr Asn

<210> 57
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 57
 Val Leu Thr Ala Thr Asn Phe Phe Gly Ile Asn Thr Ile Pro Ile Ala
 1 5 10 15
 Leu Thr

<210> 58
 <211> 18
 <212> PRT
 <213> *Mycobacterium tuberculosis*

<400> 58
 Asn Thr Ile Pro Ile Ala Leu Thr Glu Met Asp Tyr Phe Ile Arg Met
 1 5 10 15
 Trp Asn

<210> 59
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<400> 59
 ctgagatctt tgacccacaa gcgcactaaa
 30

<210> 60
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<400> 60
ctcccatggt cactgtttcg ctgtcgggtt c
31

<210> 61
<211> 30
<212> DNA
<213> Artificial Sequence

<400> 61
ctgagatcta tgagcggcca cgcgttggct
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<210> 62
<211> 30
<212> DNA
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<400> 62
ctcccatggt cacggcggat cacccggtc
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<210> 63
<211> 51
<212> DNA
<213> Artificial Sequence

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51

<210> 64
<211> 53
<212> DNA
<213> Artificial Sequence

<400> 64
ggggaccact ttgtacaaga aagctgggtc ctactgtttg ctgtcgggtt cgt
53

<210> 65
<211> 48
<212> DNA
<213> Artificial Sequence

<400> 65
ggggacaagt ttgtacaaaa aaggaggctt aagcggccac gcgttggc
48

<210> 66
<211> 50
<212> DNA
<213> Artificial Sequence

<400> 66
ggggaccact ttgtacaaga aagctgggtc ctacggcgga tcaccccggt
50

<210> 67
<211> 30
<212> DNA
<213> Artificial Sequence

<400> 67
ctggggatcc gcgtgatcac catgctgtgg
30

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<210> 68
<211> 30
<212> DNA
<213> Artificial Sequence
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<400> 68
tgcaagcttt caccagtcgt cctcttcgtc
30